REMARKS

The Office Action of September 23, 2002 has been carefully considered.

Objection has been raised to the Amendment filed on August 13, 2002, on the basis that it introduces new matter into the disclosure.

With regard to "CPFT" Applicant believes that this term does not constitute new matter. It is noted that in the original specification, the part of the material passing a specific number of micrometers is defined as "% < X." The commonly used term in the art for this concept is "cumulative percent finer than X" and this is the language which was added to the specification. Note that CPFT is used, for example, in U.S. Patent No. 5,916,536, and that the language used has the same meaning as "% < X." While "CPFT" is not used in the original disclosure, the concept of "cumulative percent finer than" is clearly as set forth in the specification as filed and no reason is seen why the new terminology should constitute new matter.

With regard to the first lines on page 9 of the specification, it is noted that the specification originally stated that Applicant observed that material passing X1 µm (CPFT X1) anticipates a change in material passign a higher X2 (CPFT X2). The language added has exactly the same meaning,

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that observing values of CPFT X1 enables anticipation of a change in CPFT X2 where X2 is greater. This does not constitute new matter.

Also on page 9 the term "the end of crystal growth phase" has been substituted for "pump-off." In this regard, it is noted that the Bayer circuit is a precipitation system in which alumina trihydrate precipitates. This precipitation system comprises a series of tanks through which the slurry, pregnant aluminate liquor plus alumina trihydrate precipitated particles, flows. In an American type precipitation system, the precipitation system comprises a series of agglomeration tanks followed by a series of feed tanks, and finally three classification tanks. The primary process step which takes place in the feed tanks is crystal growth, as is well known in the art.

With reference to Example 1 on page 13 of the specification, it is stated that at the exit from the feed tanks, the slurry is called the "pump-off," and thus, the pump-off referred to on page 9 is slurry exiting from the feed tanks. This specifically corresponds to the end of the crystal growth phase and therefore the terminology is not new matter.

Similarly, changing "crystal growth" to "feed tanks" is not new matter because it refers to the same step in the

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process. This same change was made on page 4 of the specification on line 21.

On page 11 of the specification, "stronger" was changed to "greater" which is considered to be a more accurate translation of the original French term "plus forte." The term "fort" has a variety of meanings, including "strong," "large," "stout," "high," "great" and "intense." In connection with solid content, such as the concentration of solid particles in a slurry, "fort" means that the concentration is high. Associated with "aliquot" (a part corresponding to a portion of the total flow of a liquid or slurry) as in the present case, "fort" is best translated as meaning that the portion of flow is "great."

On page 12, objection has been raised to the term "350 g/aluminate liter." The original French term used was "g/ l aluminate" or "grams per liter of aluminate" which is equivalent to grams per aluminate liter. This terminology clearly does not constitute new matter.

Moreover, the terminology "it is sufficient to measure amount passing "X1 = 20 μm" corresponds exactly to measuring CPFT X1 μm with X1 = 20 μM. With regard to the change of "crystal growth" to "feed tank series" on page 14, reference is made to Figures 1 and 2, in which the first feed tank is designated "N" and the dashed line following N indicates that the slurry can flow to other feed tanks. As Figures 1 and 2

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clearly show the slurry 5 at the end of the feed tank series N, there is a clear disclosure that the end of crystal growth corresponds to the exit of the feed tank series.

Similarly, on page 15, the beginning of crystal growth has been changed to the entry of the feed tank series, and given the showing in Figures 1 and 2 that the feed tank series is point N of the process, there is clearly equivalence between these terms.

On page 16, the "unwashed seed 9n" was changed to "tertiary seed 9n." In the specification as filed, tertiary seed was referred to as 9a, but it can be seen from Figure 2 that 9a and 9n represent the same material, and therefore the tertiary seed may also be referred to as 9n when it is injected at a different point in the process from 9a.

The objections raised on page 17 of the specification can be explained once again with reference to Figures 1 and 2 in which the feed tank series is N, which corresponds to the crystal growth phase in the process.

The remaining objections are considered to be dealt with above.

Objection has been raised to the Abstract on the basis that it is unclear which Abstract should be used. The originally filed Abstract has now been cancelled.

Claims 7 through 14 have been rejected under 35 USC 112, first paragraph, as containing subject matter not properly

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disclosed in the specification.

Applicant submits that the terminology of Claims 7 through 14 does not constitute new matter for the reasons explained above, and withdrawal of this rejection is requested.

Claims 7 through 14 have been rejected under 35 USC 112, second paragraph, as being indefinite on a number of grounds.

Objection has been raised to "controlling precipitation" in Claim 7, and the claim has now been amended to recite a process for controlling precipitation "of alumina hydrate from a slurry resulting from introduction of recycled alumina trihydrate seed into aluminate liquor," the basis for the Bayer circuit.

Objection has been raised to "predetermined" in Claim 7. The Office action relies on Joseph E. Seagram & Sons, Inc. v. Marzall, 84 USPQ 180 (CADC, 1950). Applicant observes that this case was decided prior to enactment of the current patent statute, and believes that it is no longer represents valid law. Indeed, the term "predetermined" is found commonly in the claims of issued patents, and means only that the quantities have been previously decided without a limit as to what those quantities should be. Given the teaching of the specification, there is nothing at all indefinite about this terminology.

In Claim 7, the term "particles sizes" has been

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corrected, and the term "regularly" has been deleted. Moreover, antecedent basis has been added for "the slurry" and the "updated trigger thresholds."

With regard to Claim 8, the claim has been amended to recited modifying amount of solid in the slurry at the beginning of precipitation, and antecedent basis has been added to Claim 7 for the slurry in Claims 8, 9 and 13.

Claim 9 has been amended that the modifying step comprises varying amounts of aliquots of pregnant aluminate liquor.

In Claim 13, "at a particular point in the precipitation system," has been changed to "any point of the feed tank series." With reference to page 9 of the amended specification, it is noted that the measurement point is preferably at the pump-off, which is the end of the crystal growth phase, but it may take place earlier, provided that it remains within the feed tank series. The claim has been amended to reflect this disclosure.

In Claim 13, the inappropriate period has been removed.

With respect to the formula in paragraph 3 of Claim 13, it is noted that the expression "%<X1(t)" is a function representing the values of CPFT X1 vs. time, and that "%<X2(t)" is a second function representing values of CPFT X2 vs. time. Both of these are represented by time diagrams.

According to the invention, an empirical relationship

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exists between the values of CPFT X1 and the values of CPFT X2, such at F (CPFT X1, CPFT X2) = 0. The equation therefore states that a function, F(X,Y) = 0 indicates that there is a relationship F between X and Y after having taken into account that there is a time interval between an occurrence of the same accidental phenomenon observed on each curve.

Objection has also been raised to "a same accidental phenomenon" and the claim has been amended to refer to the specific curves mentioned above. The term "accidental phenomenon" is any random phenomenon which is observed and which can be seen on both curves separated by a specific time.

Regarding the "authorized" variation in values, it is noted that the produced hydrate particle size must be greater than a minimum value M, or the quality of the alumina trihydrate produced would decrease, and must be smaller than a maximum value M, because higher particle sizes would reduce the productivity of the produced alumina trihydrate. This interval [m,M] is the maximum interval permitted for the size of the hydrate produced. Thus, "authorized" has been changed to "permissible" in Claim 13.

Regarding Claim 14, the claim has been amended to explain what "corrective action" refers to, modifying the amount of solid in the slurry at the beginning of the precipitation. The other points raised with regard to Claim 14 are thought to have been dealt with above.

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In view of the foregoing amendments and remarks, Applicants submit that the present application is now in condition for allowance. An early allowance of the application with amended claims is earnestly solicited.

Respectfully submitted,

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APPENDIX

IN THE CLAIMS:

7. (Amended) In a BAYER circuit including a preliminary agglomeration phase, a crystal growth phase and a classification phase, a process for controlling precipitation of alumina hydrate from a slurry resulting from introduction of recycled alumina trihydrate seed into an aluminate liquor, in which particle size quality of alumina hydrate produced in the circuit and circulating in feed tanks is monitored, comprising the steps of:

a) a calibration step including:

a1) measuring, versus time, of:

cumulative percentage of alumina hydrate particles circulating in the feed tanks in the circuit that are finer than X2 μm, defined as CPFT X2; and

cumulative percentage of alumina hydrate particles circulating in the feed tanks in the circuit that are finer than X1 μm, defined as CPFT X1;

where X1 and X2 are predetermined [particles] particle sizes and X1 is smaller than X2; and

a2) determining a relationship R between CPFT X1 and later changes in CPFT X2, and defining upper and lower trigger thresholds of CPFT X1 which correspond to maximum permissible variations in CPFT X2; and

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b) controlling the circuit, comprising [regularly] measuring CPFT X2 and [regularly] updating a correlation between CPFT X2 and the particle size of hydrate produced by the circuit, regularly measuring CPFT X1 and a regularly updating of the relationship R, and causing corrective action to the slurry at the beginning of precipitation when the measured value of CPFT X1 reaches [one of the regularly] an updated trigger [thresholds] threshold.

8. (Amended) Process according to claim 7, wherein said corrective action includes [modification of] modifying amount of solid [content] in the slurry at the beginning of the precipitation.

9. (Amended) Process according to claim 8, wherein the [modification in the solid content in the slurry at the beginning of the precipitation is achieved by modifying proportions of aliquots] modifying comprises varying amounts aliquots of pregnant aluminate liquor feeding a first agglomeration tank and a first feed tank, respectively.

10. (Amended) Process according to claim 7, wherein said calibration step comprises:

1) daily measuring CPFT X1 in the slurry at [a particular] any point [in the precipitation system] of the feed tank series, which is used to produce a first particle size vs. time diagram represented by a curve Y = f<X1(t)[.];

2) daily measuring CPFT X2 in the slurry at [a

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particular] any point [in the precipitation system] of the feed tank series, which is used to produce a second particle size vs. time diagram represented by a curve Y = %<X2(t) and in which X2 is a value already known for its good correlation with the particle size of the hydrate produced;

3) creating of an empirical relation between the particle size vs. time diagrams, which characterizes the relation R as:

$$R(\%{<}X2(t), \%{<}X1(t-\tau)) = 0$$

where t is the time at which CPFT X2 is measured and τ is a characteristic time interval estimated by observing an occurrence of a same accidental phenomenon on each curve; and

4) defining a [the] maximum threshold and [the] minimum threshold of CPFT X1 obtained from the relation R and a maximum interval of the [authorized] permissible variation of values of CPFT X2.

14. (New) Process according to claim 13, wherein said controlling comprises:

1) daily measuring CPFT X1 in the slurry at [a particular] any point in the [precipitation system] feed tank series, in order to complete the first particle size time diagram represented by the curve Y = %<X1(t);

2) daily measuring CPFT X2 in the slurry at [a particular] any point in the [precipitation system] feed tank series, in order to complete the first particle size time

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diagram represented by the curve $Y = k<X2(t)$;

3) [regular] updating of R and the definition of trigger thresholds of CPFT X1[, or updating after an important modification in a process parameter]; and

4) triggering of a corrective action <u>to modify amount of solid</u> in the slurry at the beginning of the precipitation when the measured value of CPFT X1 reaches one of the thresholds defined in 3).